

*Violent Criminality:*  
*“It’s all in your head”*

for the Board of Parole Hearings



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Candice Skrapec, Ph.D.  
Professor  
Department of Criminology  
CSU, Fresno

# What do criminals look like?





**What do killers  
look like?**



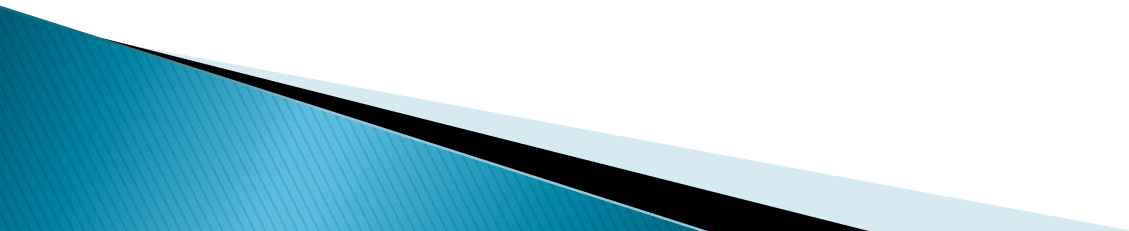


# How about this?



Dorothea Puente

**What do sex  
offenders look like?**





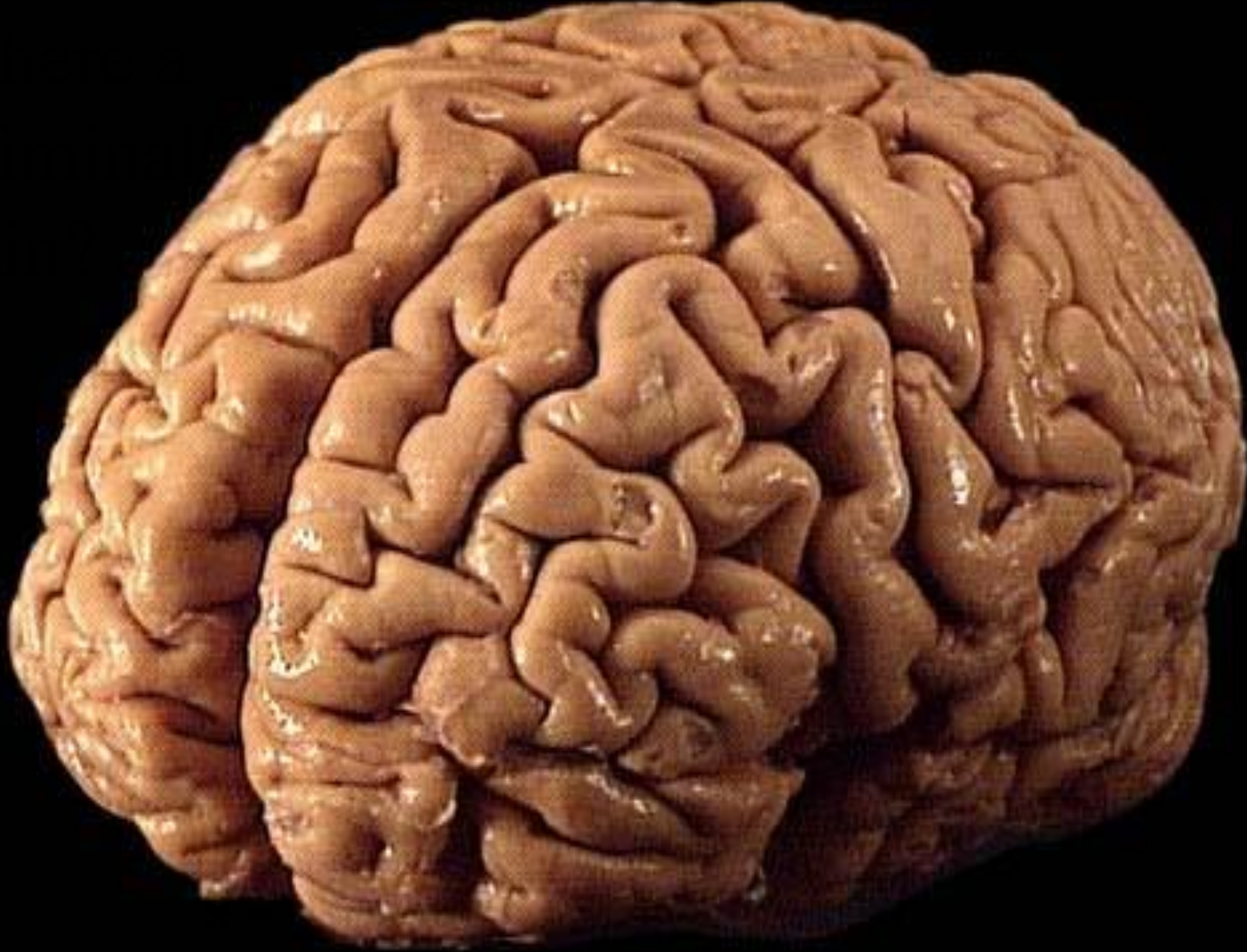
A photograph of Jared Fogle, a man with glasses and a blue shirt under a dark jacket, smiling while holding a very large sandwich. The sandwich is filled with meat, cheese, lettuce, tomatoes, and cucumbers. He is wearing clear plastic gloves. The background shows a restaurant or food service area with shelves and other people.

Jared Fogle

“the younger the better”



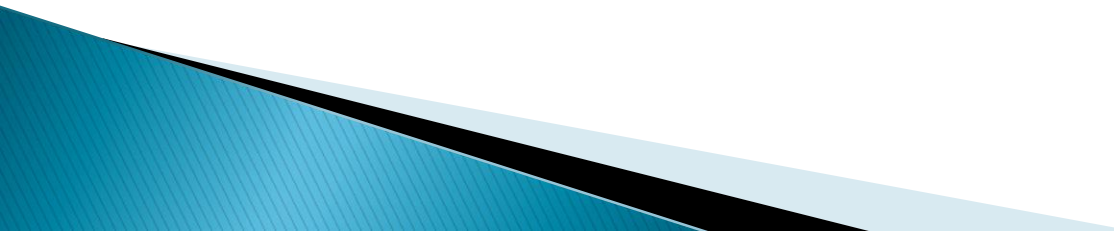
**What do the brains of  
offenders look like?**



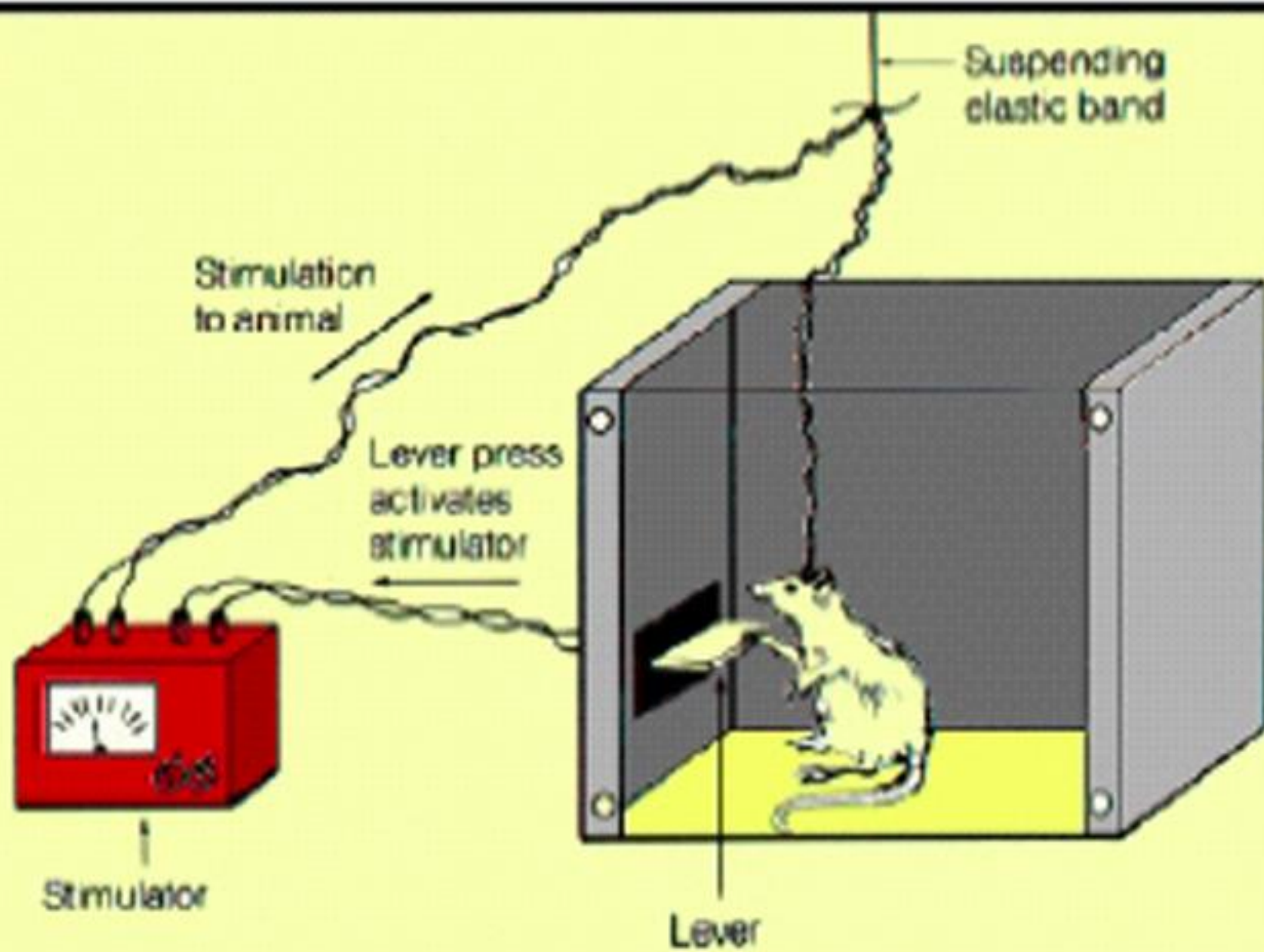
the brain on trial

**Specific functions are  
associated with specific  
regions of the brain.**

# “Ben”

- ▶ lateral hypothalamus acts as a “pleasure center”
  - ▶ ventromedial hypothalamus acts as a “satiation center”
- 





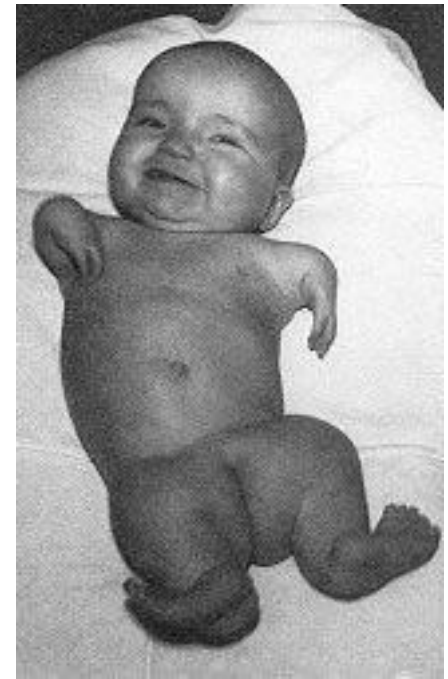


# Toxic Environments



# Thalidomide Case as a Model of Teratogenic Effects

- ▶ critical period is from the 35th to the 48th day after the last menstrual period
  - e.g., if 35 - 37 days: no ears
  - e.g., if 39 - 41 days: no arms
  - e.g., if 41 - 43 days: no uterus



# This is the idea:

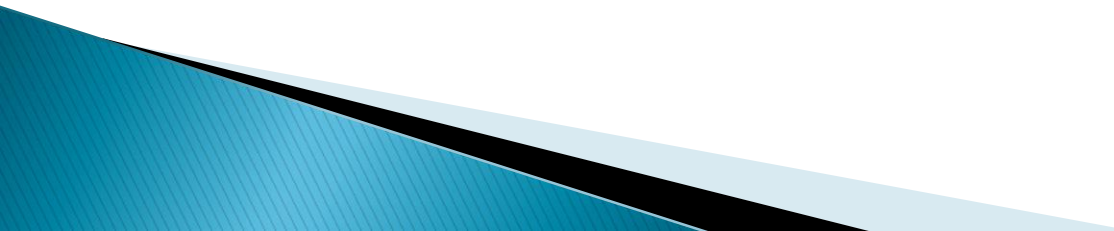
- ▶ The same teratogenic factors that produce physical birth defects also affect brain development at that same time.
- e.g., hyperactivity, impulsiveness, restlessness, inattentiveness

# Toxic Experiences



# BRAIN FUNCTION/DYSFUNCTION

The developing brain is shaped by experience—including physical and psychological abuse, and neglect.





# Bruce Perry




- ▶ Experience can change the mature brain - but experience during critical early periods (prenatal; early childhood) organizes brain systems.

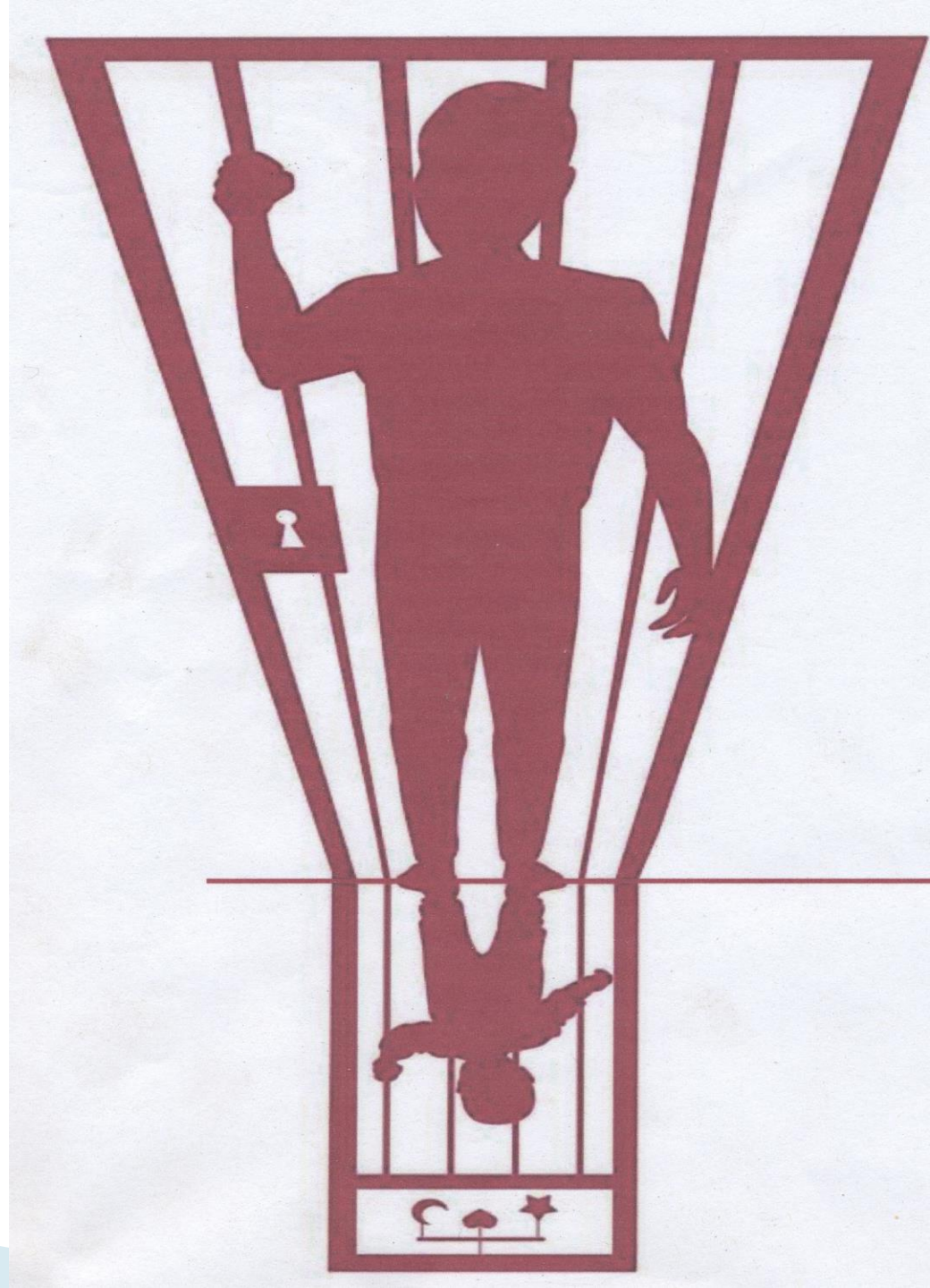
# Trauma-informed Protocols

- ▶ e.g., effects of early childhood trauma might be misdiagnosed as an ADD.

# Nicole Brown (pediatrician)

- ▶ distracted and disruptive behaviors that look like ADDs may instead be PTSD
    - e.g., impulsivity vs. a stress response in overdrive
    - e.g., inattention vs. hypervigilance to potential threats
- 

the first 33  
months are  
critical!



Violent behavior is the product of different factors interacting with each other.


- ▶ No ONE factor causes it.
  - (except some head injuries)



# Psychology . . .

- ▶ is biology.

# Silbersweig & Stern studies (1990s)

- using PET scans, examined brain activity of schizophrenic patients while hallucinating
  - found they are actually experiencing voices in the absence of external stimuli
- 

# neurocriminology

- ▶ using neuroscience to understand criminal behavior

# Consider pedophilia.

- pedophile  $\neq$  child molester

# Klüver-Bucy syndrome

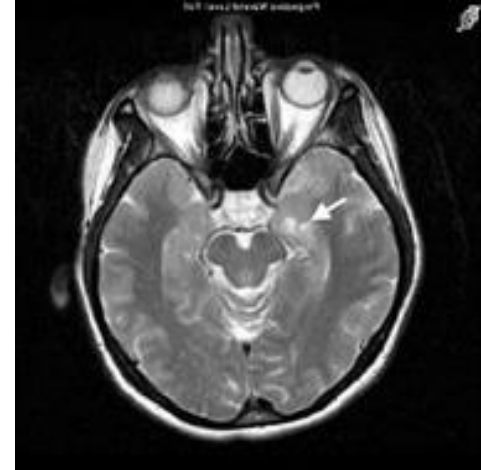
- ▶ Klüver & Bucy (1937)
  - bilateral anterior temporal lobectomy in male rhesus monkeys
- ➡ excessive orality, hyperphagia, distractibility, hypersexuality and change in sexual preference, loss of fearful responses . . .



# In humans:

- ▶ full blown KBS - after bilateral temporal lobectomy to control epilepsy
- ▶ partial KBS - diverse disorders affecting temporal lobe (e.g., head trauma; Alzheimer's; unilateral temporal lobectomy)
  - most only have one or two features (b/c do not completely destroy anterior temporal regions)

# *Radiolab* clip, “Blame”

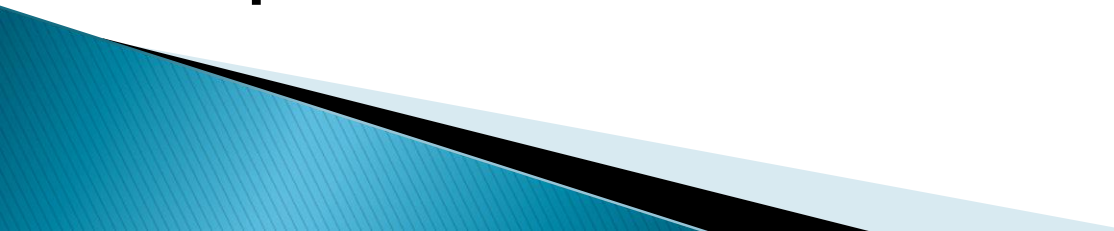


- ▶ Kevin - case report
- ▶ hx: seizure focus in rt temporal lobe
  - (partial) rt anterior temporal lobectomy at 33
  - rare, slow-growing tumor
  - seizures returned
  - at 39, removed most of remaining temporal lobe . . . .


# One month later:

- ▶ onset of dramatic behavioral changes: irritability++; hyperphagia (gained 3 pant sizes in 6 mos); hypersexuality  
...

Homeland Security arrests Kevin in 2006 for downloading child pornography.

- ▶ prosecution asked for the max: 20yrs
  - ▶ neurologist Orrin Devinsky testified about KBS
  - ▶ judge's decision: 26 mos federal prison + 25 mos house arrest + 5 yrs supervision
- 

# But (again),

- ▶ most pedophiles develop urges early and without tumors, so ... ??
  - temporal lobe dysfunction appears to be involved in deviant sexual urges
- 

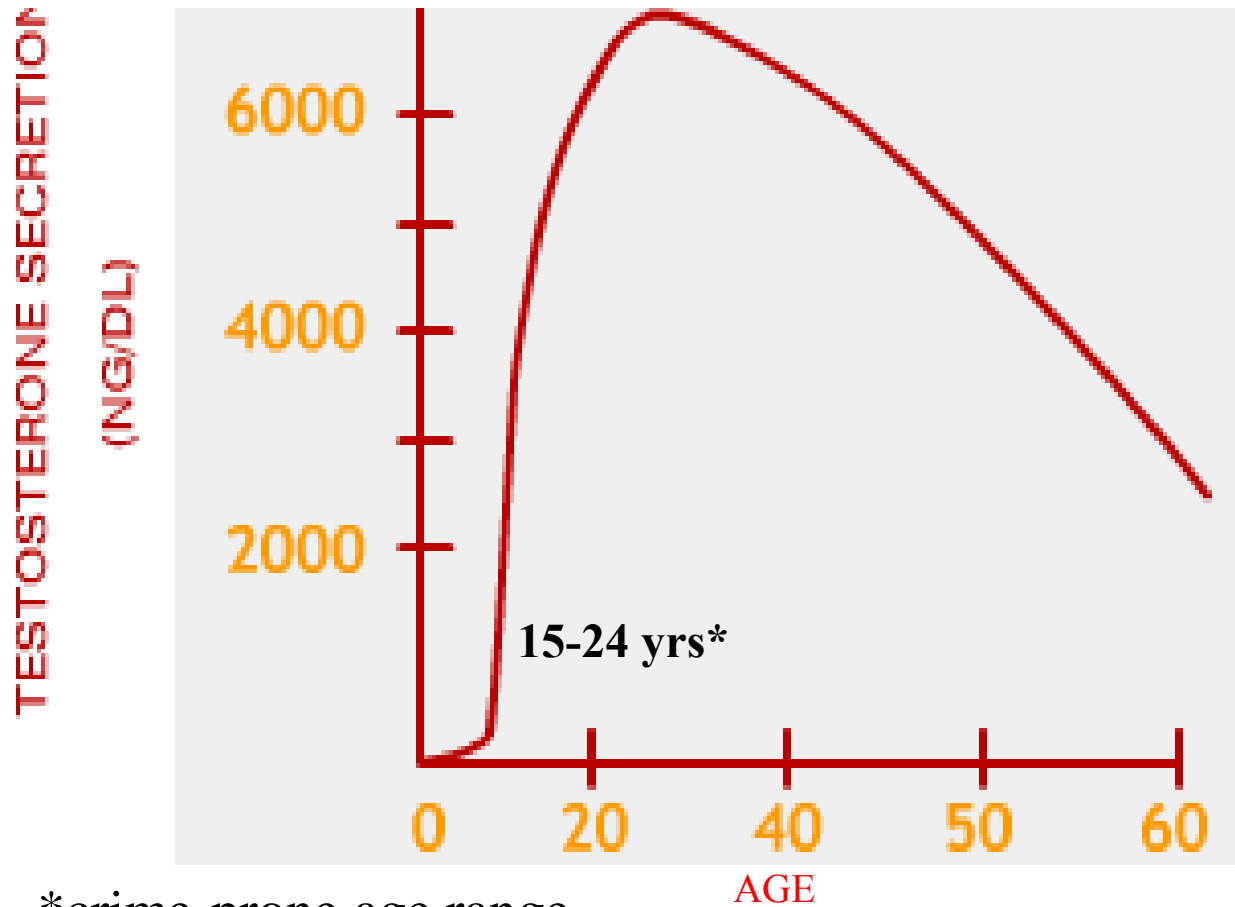
# Sex Hormones

➤ e.g., testosterone

competitiveness  
dominance  
(aggression)



# Circulating Testosterone Levels



# But it's complicated.

- ▶ Put 5 male monkeys in a large area together.
- ▶ Testosterone is **not causing** aggression; It is boosting aggression that is already there.

# chronic violent offenders



# Violent Behavior

▶ predatory

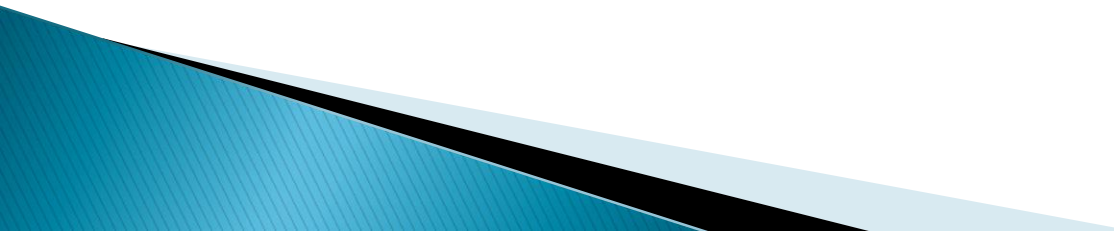
vs.

▶ impulsive



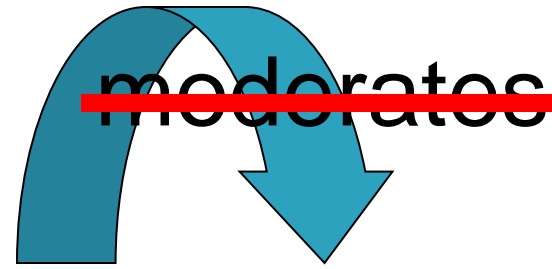
Neurological tests are revealing differences in the structure and function of the brains of chronic violent offenders. . .

. . . and differences in brains of impulsive vs. predatory offenders



underaroused

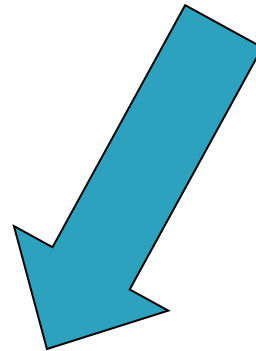
prefrontal cortex  
[rational]



limbic system  
(amygdala)

[emotional]

impulsive



~~controlled~~ behavior

Pre-Frontal  
Cortex

Limbic  
System





# Phineas Gage?

- ▶ 1848
- ▶ railroad worker



Severed connection  
between Prefrontal  
Cortex (rational  
thinking) and Limbic  
System (urges, drives,  
emotions)



# Daniel Tranel (2000)

- ▶ injuries to ventromedial PFC of “normal” people (by stroke, infection, gunshot)
  - antisocial and violent behavior; impulsive; reckless; remorseless. .

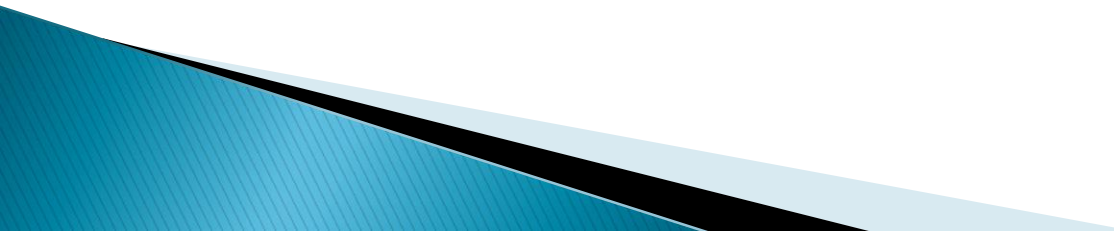
# Robert Hare:

## Typical Traits of Psychopaths\*

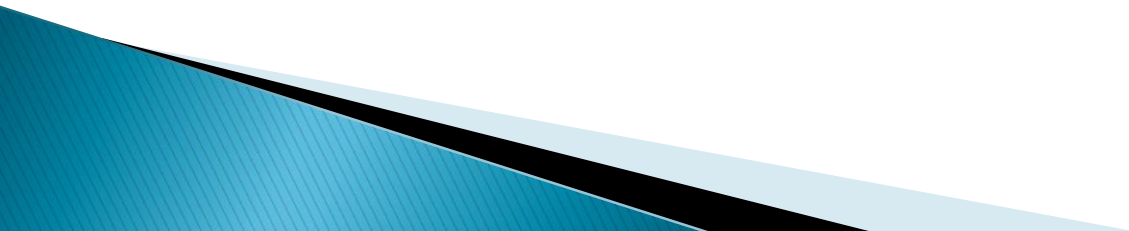
- ▶ glib and superficial
- ▶ egocentric; feel superior
- ▶ lack remorse/guilt
- ▶ lack (emotional) empathy
- ▶ deceitful and manipulative
- ▶ shallow emotions
- ▶ impulsive
- ▶ irresponsible
- ▶ need for excitement . . .

\*Psychopaths exhibit almost all these traits.

# Psychopathy

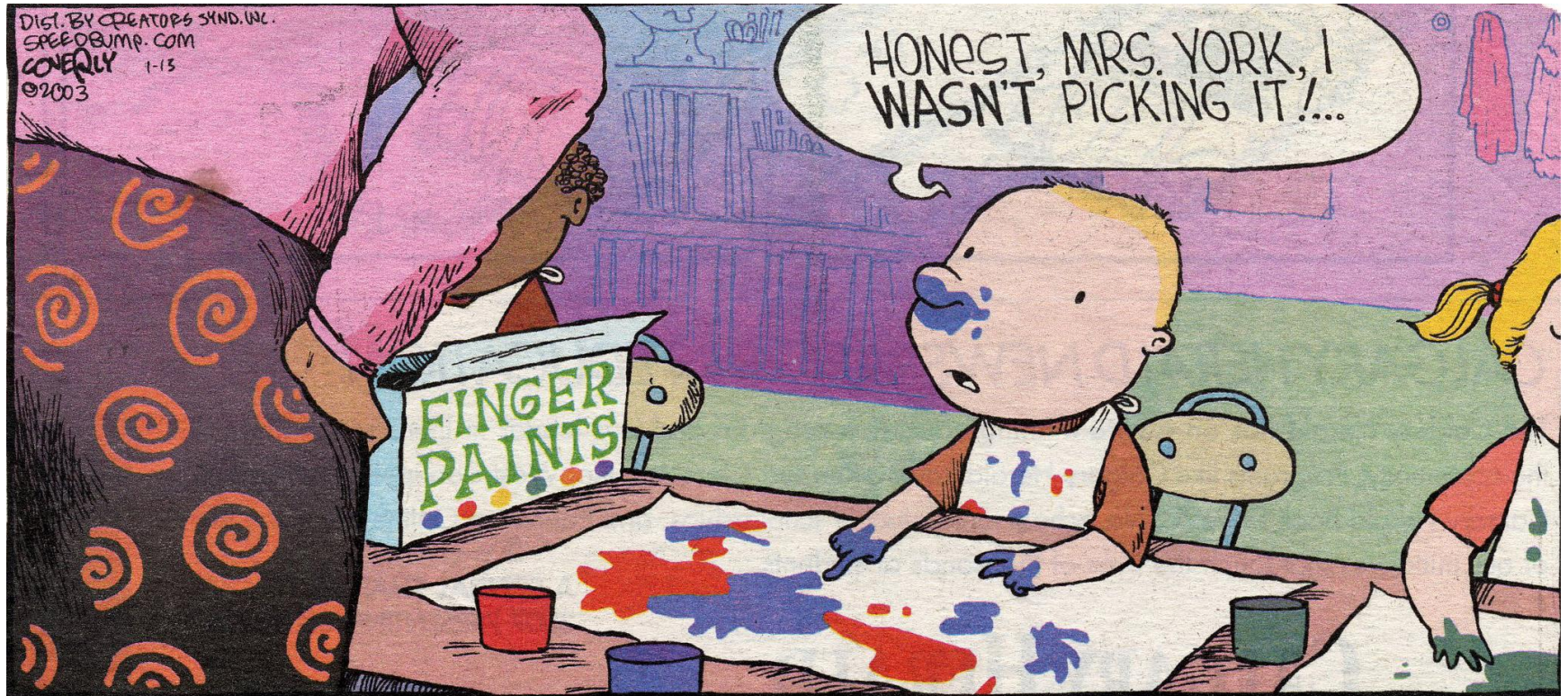
- ▶ personality disorder involving specific cognitive and emotional deficits
  - ▶ lifelong pattern of antisocial behavior with no remorse
- 

Many psychopaths do not become criminals per se (but can be equally exploitative, deceptive, and irresponsible).



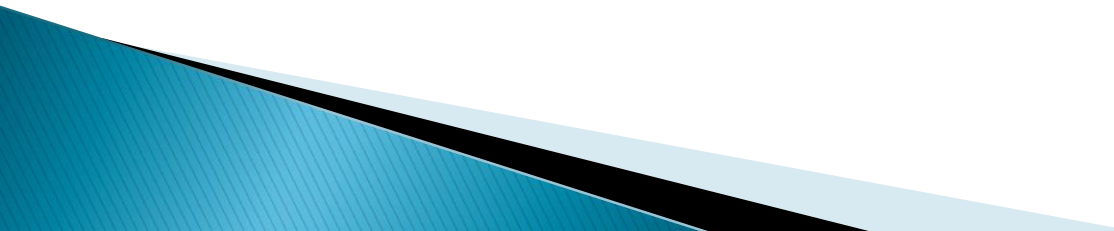


# a budding psychopath?





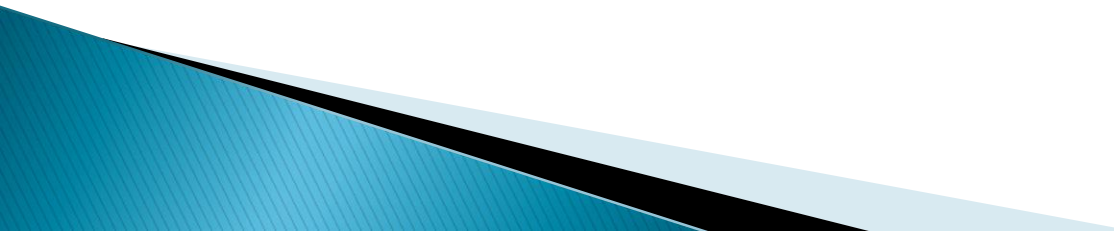
# Brains of psychopaths:

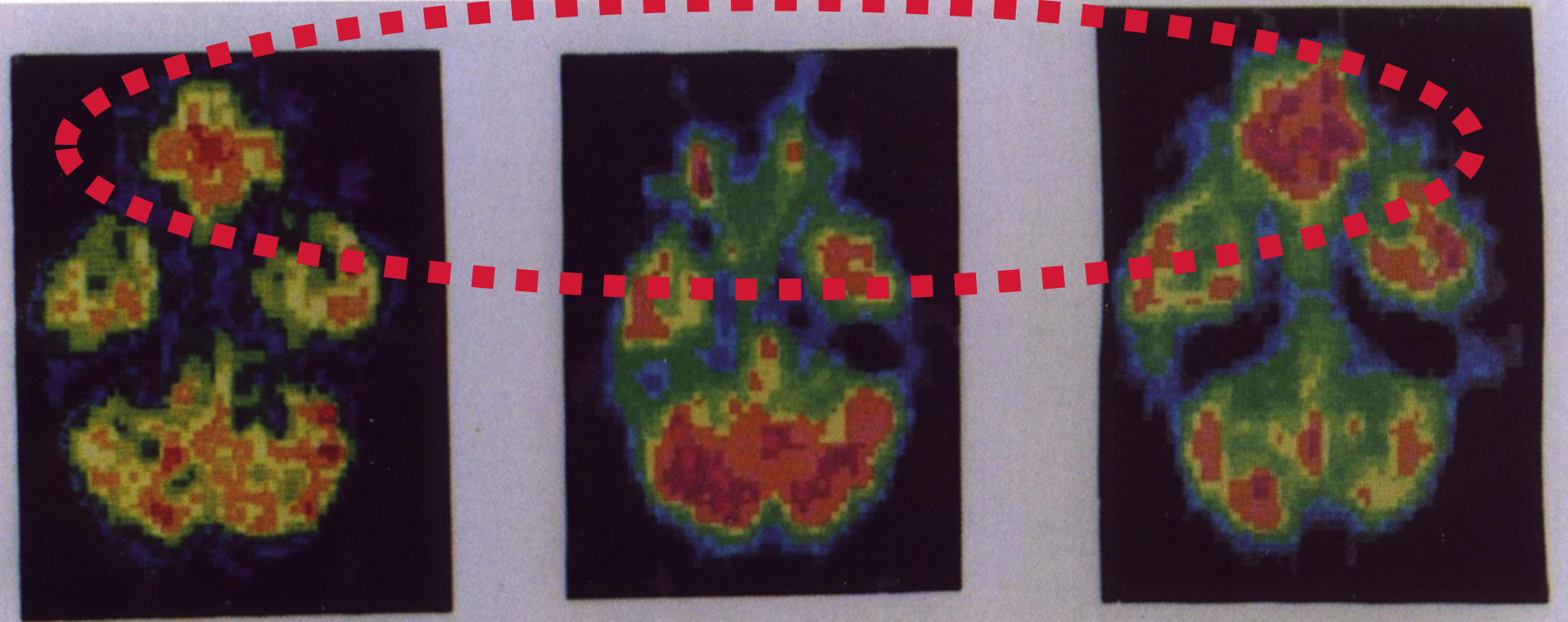
- ▶ various, specific combinations of structural abnormalities and functional deficits
  - ▶ e.g., lack conscience (no emotional empathy)
  - ▶ e.g., poor impulse control
- 



**X bullying**

# Raine et al. (2000) -

- ▶ MRI study of 21 “psychopaths” (vs. controls)
  - ▶ 11 % smaller volume of neurons in PFC (~ 2 tsp)
- 



control

passion/impulsive  
murderer

predatory  
murderer

PET scans



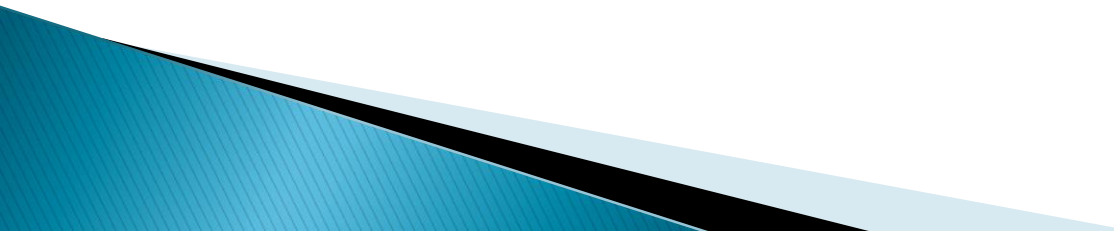
Hare used functional brain scans:  
Psychopaths and non-psychopaths  
viewed neutral v. horrific pictures.



# Unlike non-psychopaths . .

- ▶ psychopaths had very little activity in amygdala (similar to their responses to neutral pictures)

# Yang, Schug, & Raine (2009)

- ▶ structural brain scans of 27 psychopaths (vs. controls)
  - ▶ psychopaths' amygdalae 18% smaller
- 



)



Raine – individuals with smaller amygdalae are 3X more likely to recidivate within 3 yrs post-release

- ▶ Psychopaths perform the lexical decision task differently.

- ▶ EEG

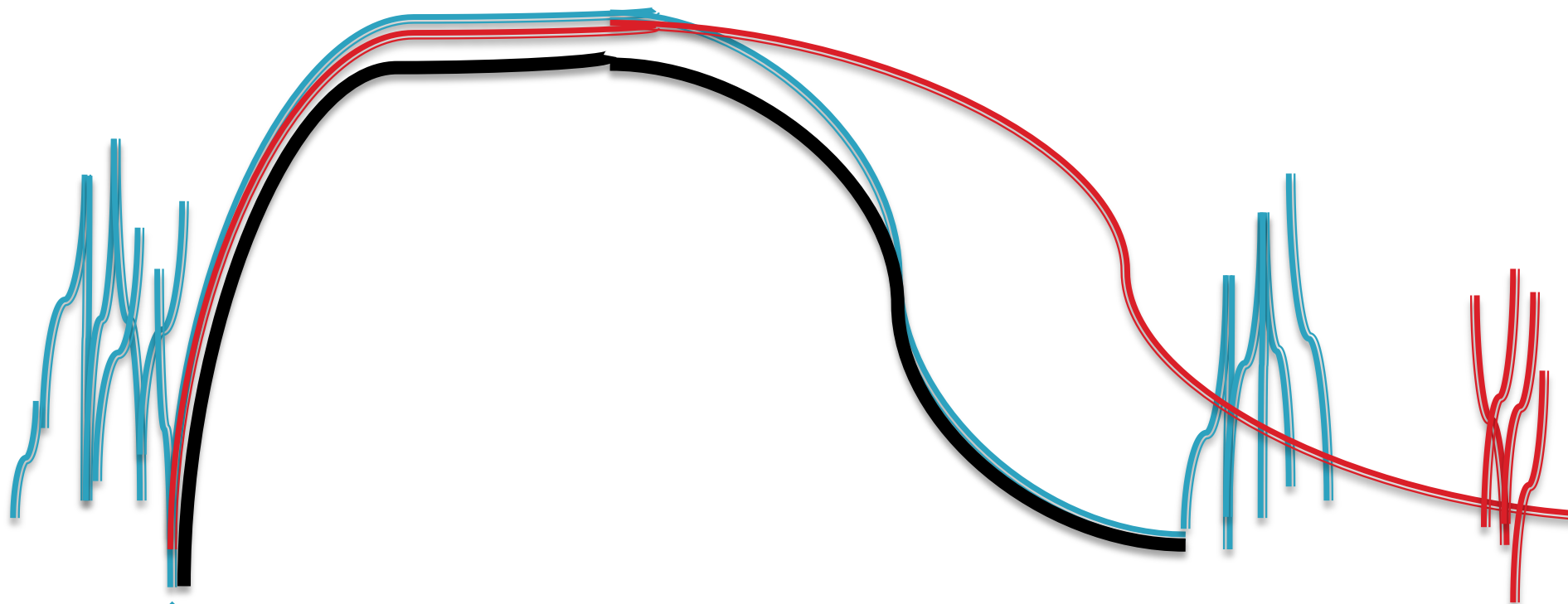
- TREE

- TPSL

- BLOOD

- process emotional words differently

Williamson, Harpur & Hare (1991)



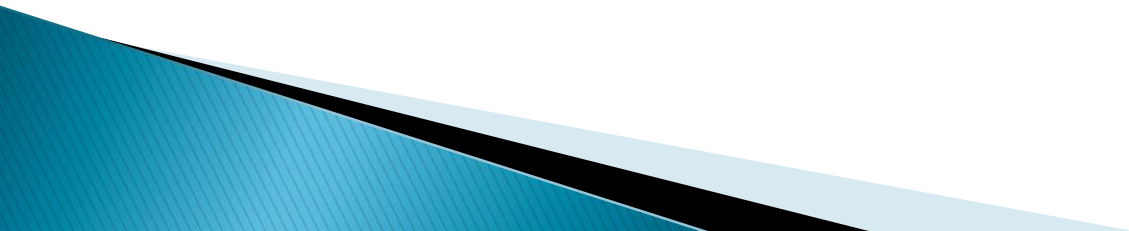
tree

murder

Neurobiologically, the mechanisms that should impart emotion to thoughts and attitudes are not working properly.



They don't care because  
they can't care.



# Psychopaths as Offenders




# Robert Hare's research suggests psychopaths constitute:

~ 1% of general population

~ 15 to 25% of prison population  
(a minority LIKELY to re-offend)



Recidivism rates for criminal psychopaths are higher than for nonpsychopathic offenders.

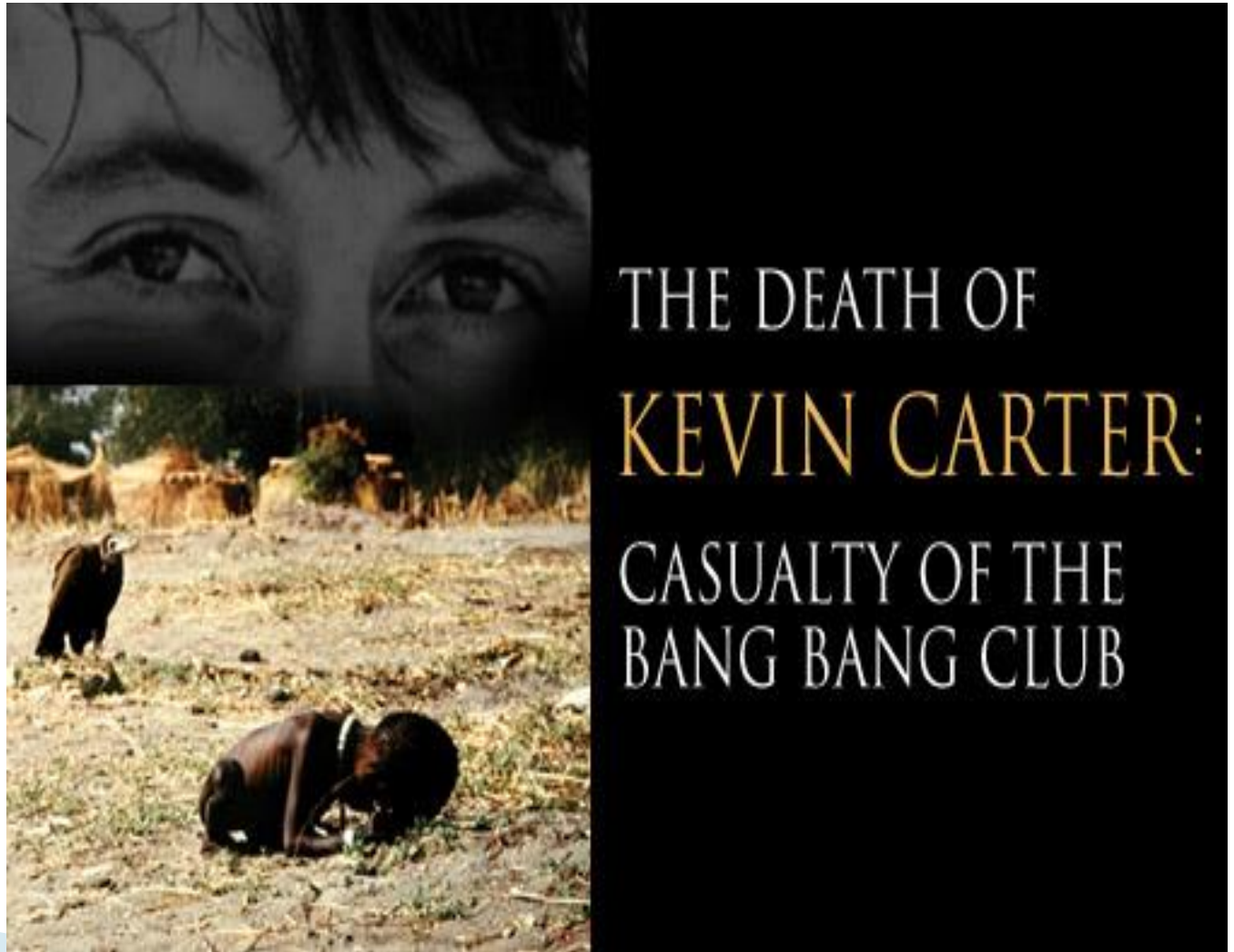
- ▶ 2X higher for non-violent offenders
  - ▶ 3X higher for violent offenders
- 



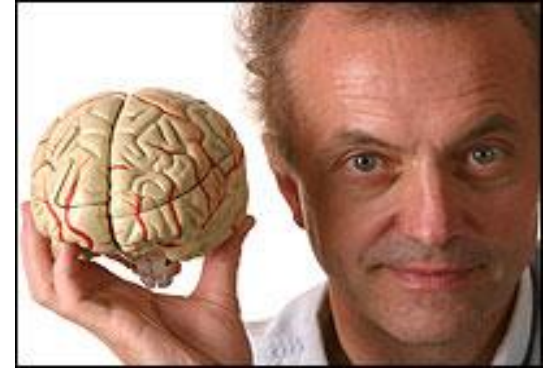




# 1994 Pulitzer Prize winner



# Adrian Raine



- the “dangerous few”
- conceptualizes criminality as a disorder
  - in the same way as schizophrenia, etc.

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